3

Division of Wildlife Refuges

Narrative Report Routing Slip

Refuge SWAN LAKE Year 1964

Chief's Office: Mr. Gillett _____ Mr. Ackerknecht _____

Mr. Fermanich _____ Miss. Baum _____

Wildlife: Mr. Ballou _____ Mr. Webster _____ Mr. Stiles _____

Resources: Mr. Stollberg _____ Mr. Lamb _____ Mr. Britt _____

Interpretation: Mr. DuMont ___ Mr. Monson ____ Mr. Goldman _____

Planning: Mr. Crandall 11/19

Job Corps: Mr. Regan _____ Mr. Huenecke _____

Narrative Report
Swan Lake National Wildlife Refuge
January - December, 1964

PERMANENT PERSONNEL

Robert H. Timmerman	Refuge Manager
William H. Thornsberry	Wildlife Tech.
Marvin F. Lentz	Refuge Clerk
Benny N. Howerton,.....	Operator-General

TEMPORARY EMPLOYEES

Floyd A. Holland	Maintenanceman I
Roy T. Warren	Maintenanceman II
Ervin Windsor	Maintenanceman II

CONTENTS

		Page
I.	General	
	A. Weather Conditions	1
	B. Habitat Conditions	2
	1. Water	2
	2. Food and Cover	2
II.	Wildlife	
	A. Migratory Birds	3
	B. Upland Game Birds	5
	C. Big Game Animals	5
	D. Fur Animals, Predators, Rodents, and Other Mammals	5
	E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies	6
	F. Other Birds	
	G. Fish	6
	H. Reptiles	
	I. Disease	7
III.	Refuge Development and Maintenance	
	A. Physical Development	7
	B. Plantings	7
	C. Collections and Receipts	8
	D. Control of Vegetation	9
	E. Planned Burning	9
	F. Fires	9
IV.	Resource Management	
	A. Grazing	
	B. Haying	
	C. Fur Harvest	
	D. Timber Removal	
	E. Commercial Fishing	
	F. Other Uses	
V.	Field Investigation or Applied Research	
	A. **Goose Banding**	9
	B. **Goose Transfer**	9
	C.	
	D.	
	E.	
VI.	Public Relations	
	A. Recreational Uses	11
	B. Refuge Visitors	12
	C. Refuge Participation	15
	D. Hunting	15
	E. Violations	16
VII.	Other Items	
	A. Items of Interest	17
	B. Photographs	18
	C. Signature	

I. GENERAL

A. Weather Conditions

	Precipitation			Max.	Min.
	Month	Normal	Snowfall	Temp.	Temp.
January	.43	1.64	12	63	0
February	.77	1.79	6	58	3
March	2.96	2.57	5	70	10
April	5.38	3.72		83	26
May	2.81	4.52		90	38
June	3.07	4.87		92	38
July	1.48	3.92		101	54
August	3.90	3.67		103	47
September	9.95	4.88		92	36
October	.40	2.72		81	24
November	2.79	2.32	3	79	-3
December	1.05	1.65	6.5	62	-3
Annual Totals	34.99	38.27	32.5	Extremes 103	-3

The weather data tabulated above were collected at the official weather station on the Fountain Grove Wildlife Area located about eight miles northwest from Swan Lake.

Nothing too spectacular took place weather wise during the year. A dry and open winter was experienced. The precipitation received during the year was 3.28" below normal. One dry hot period during July and August cut crop production considerably. During the first week in August temperatures in excess of 100 degrees were experienced daily. September was wet followed by a dry October. Autumn and early winter were pleasant thus providing near excellent working conditions during the goose trapping and hunting season.

B. Habitat Conditions

1. Water

Silver Lake was dry and the other two units were well below recommended elevations at the beginning of the reporting period. No heavy rains were recorded during the spring, however enough runoff occurred to allow us to bring Swan Lake and South Pool up to prescribed levels. The spring drawdown was begun on May 18th with Swan Lake reaching the desired elevation on June 10th. A minor flood was experienced June 22 when the Grand River crested at 32.22 feet. Water entered South Pool about six inches deep over both spillways. Heavy rains on September 1 caused the Grand River to reach a flood crest of 32 feet on September 4. Moist soil plants in Swan and South Lakes were flood irrigated as usual during the summer. A good crop of seed was produced and flooded on schedule during the hunting season.

2. Food and Cover

The following table compares food production during the past ten years.

Foods Available For Waterfowl 1955-1964

Year	Bushels of Grain*	Acres of Wheat	Acres of Ladino Clover	Acres of** Moist Soil Foods
1955	11,450	718	-	400
1956	27,330	712	-	400
1957	29,800	967	-	400
1958	4,920	1,276	15	400
1959	34,750	979	212	2,000
1960	16,000	1,250	204	2,285
1961	21,180	223	638	2,200
1962	26,280	687	487	2,200
1963	52,600	667	525	2,200
TOTALS	224,310	7,479	2,081	12,485
Averages	24,923	831	343***	1,387
1964	29,240	775	427****	2,200

* Includes Corn, Milo, and Rice
** Includes Wild Millet, Chufa, Tame Millet, and Smartweed
*** Six Year Average
**** Includes some Alsike and Alfalfa

As the above table indicates, this was a better than average food production year. Corn yields were cut drastically by drought conditions during pollination. The ears filled poorly, if at all. Some stalks failed to produce ears. The 470 acres of corn grown by refuge personnel only averaged 46 bushel per acre compared with 105 bushel per acre in 1963. With a little more help from nature we would have exceeded the grain production record set in 1963.

Winter wheat was seeded during August into soil too dry for germination. We were almost done seeding when rain came and all the wheat came up at once. An excellent stand of wheat was available for the geese.

Ladino clover has been the only legume grown for goose food for the past six years. This year we tried some alsike clover and Ranger alfalfa. The clovers were taken in preference to the alfalfa, but the alfalfa was accepted when the clovers were gone.

The geese came early and built to a peak population early. By the middle of November most available foods on the refuge had been consumed. High winds knocked down much of the tall corn, so even most of this reserve was gone. The geese were rather hard pressed for food until the season closed on December 13. With the close of season the geese immediately began feeding off the refuge.

II WILDLIFE

A. Migratory Birds

Ducks

A few mallards were using the refuge most of the winter. When the lakes froze solid in cold weather they moved to the Missouri River and would return when the lakes opened up.

The peak spring population was reached the second week in March when 20,000 mallards and lesser numbers of other species were using the refuge.

The summer population, mostly wood ducks, was estimated at 300 ducks. Two broods of wood ducks were observed June 2nd and another brood containing ten young on June 5th. These broods were all found in the borrow pit along the south end of the Silver Lake levee.

The first flocking of blue-winged teal was observed August 8th. The first pintails arrived the last week in August. The peak fall population of 99,430 ducks was reached the third week in November. At this time most of the use was confined to flooded vegetation in South Pool. Mallards made daily feeding flights to bottomland corn fields southwest of the refuge. The duck population dropped to about 100 during most of December.

Geese

The Canada goose population remained at about 80,000 on or in the vicinity of the refuge during the winter. No spring build-up was noted. There apparently was a turn-over of birds, but the overall population remained fairly constant. Most of the geese had migrated north by the end of April. About 200 geese, including cripples that escaped from the display pen, spent the summer here.

The first 3,000 fall migrants arrived September 13th about a week ahead of schedule. A major migration took place on September 27th at which time about 45,000 Canada geese arrived along with the first blue and snow geese. The peak population of 121,000 Canadas was reached the week of October 18th. Blues and snows peaked the first week in November at about 20,000. Very few white-fronts visited here this year. Very few small Canadas were mixed in with the common Canadas in 1964 as compared to 1963.

Waterfowl use for the fall period during the past ten years is shown in the table below.

Number of Days Use

Year	Canada Geese	Other Geese	Ducks	Coots	Totals
1955	4,692,100	170,100	7,691,500	90,800	12,644,500
1956	3,390,300	354,900	4,097,700	52,700	7,895,600
1957	2,449,000	36,300	4,289,300	32,450	6,807,050
1958	2,505,700	198,600	2,131,400	14,500	4,850,100
1959	3,364,825	468,489	4,363,621	373,800	8,570,735
1960	5,738,300	358,610	3,400,925	317,453	9,815,828
1961	4,546,580	428,953	4,393,500	85,750	9,454,783
1962	7,113,600	657,300	1,344,360	107,100	9,222,360
1963	8,831,375	969,920	4,677,750	230,300	14,709,345
1964	7,980,700	687,050	4,931,220	175,350	13,774,320

A look at the above table reveals that the Canada goose use of the refuge dropped off almost a million days from the record set in 1963. The geese came in almost a week earlier than usual and the peak population was reached two weeks earlier than in 1963. The drop in use days can be accounted for partly by a decrease in the peak population. Part of it can be explained by an early season closure permitting the geese to use areas off the refuge.

Our population figures are based on aerial counts taken by Missouri Waterfowl Biologist Vaught at weekly intervals during the season. We were not able to get the right conditions for taking aerial photos to check the counts. However, we have no reason to believe that the counts are biased.

Waterbirds

The white pelican population built up to about 1,500 during September.

Our high rough fish population provides an abundance of food for these birds, and the public enjoys seeing those "big white geese."

Pied-billed grebes were quite numerous during September with a peak of 25 recorded on the 24th. Sora rails were abundant for a short period in late September and early October.

Mourning Doves

The dove population and nesting success was about average for this part of Missouri. The early part of the hunting season which opened September 1 was good with plenty of birds for lively shooting. Cold weather soon drove these doves south and no late concentration took place. A few doves winter in this area.

We were only able to band ten doves the past season here at headquarters. The manager shot one of these banded birds almost five miles away on opening day of the season. This may be the only return we will get from this small sample.

B. Upland Game

Bob-whites seem to be about holding their own on the refuge with the population estimated at 275. Birds on the surrounding area did not seem quite as numerous as a year ago.

A few pheasants are found along the northern boundary of the refuge. One brood was reportedly raised east of the shooting area headquarters. It is doubtful if these birds will ever become well established.

No pinnated grouse have been observed by refuge personnel. A bird watcher reported seeing what he thought was a prairie chicken east of State Headquarters. This is in the general area frequented by pheasants, so it may have been a hen pheasant. We had hoped to release some more grouse this year in the native grass area on the east side of the refuge. We have been unable to get the birds to date.

C. Big Game Animals

The white-tailed deer population on the refuge may be increasing slightly. It is not uncommon to see fifty deer during a drive through the area. The public has a good chance to observe them along the oil road on the east side of the area where herds of up to about 40 feed within a few feet of the fence. We estimate that about 250 were using the refuge at the close of the period. It may be necessary to start harvesting some of these animals in the not too distant future. They may begin to damage crops and create a traffic hazzard.

D. Fur Animals, Predators, Rodents and other Mammals

Raccoons cause more damage than any other animal in this category.

During the corn planting season they dig out the planted corn making for poor stands and lower yields. Prior to the trapping season we located several trappers who expressed an interest in harvesting raccoon. Due to low pelt prices all of them decided not to trap except one, and he started trapping too late to be effective. Only eight raccoons were removed.

The beaver population is slowly increasing. There are about six active colonies on the refuge. Most of these animals are doing no harm and probably helping by cutting undesirable trees. One drainage ditch east of Silver Lake is continually dammed off by beaver. These particular animals we would like to have removed.

The mink and muskrat populations are low and will probably remain so under present water management.

Red fox and coyote populations are low, but with our present high rabbit population we can probably predict an increase in predation. Coyotes are more numerous northeast of here than on the refuge itself, but of course it is hard to make the public understand that not every coyote in the country is a product of the refuge.

E. Hawks, Eagles, Owls, and Crows

The first bald eagle was an immature observed on October 3. Our population is composed of about twice as many immatures as we have adults. High water prevented the taking of the mid-winter eagle inventory at the prescribed time. Based on counts taken prior to the flood we estimated a population of 54 eagles composed of 36 immatures and 18 adults. These birds do a good job of disposing of dead goose carcasses.

Crows do not congregate on the refuge. Some large roosts are to be found along the Missouri River bottoms south of here.

Early in the summer the State Agent from Kirksville called that he was bringing a "young eagle" over for identification. We couldn't be certain, but tentatively identified it as a red-tailed hawk. We were stuck with it as it was too young to fend for itself. Mr. Red-tail lived high on a diet of hamberger, rabbits, mice, and sparrows until he decided that childern's bare toes would provide a change of fare. At this time he was banded and released in a far corner of the refuge.

G. Fish

Silver Lake was dry at the beginning of the year. The first run-off in the spring was passed through into South Pool to flush the lake and get rid of some of the dead fish. We hoped that there had been a complete fish kill and that rough fish could be kept out at least for a few years. After the lake filled we had it stocked with 20,000 each of Channel catfish, Red-eared sunfish, and Large-mouth bass fingerlings. All water released from Silver Lake was passed over about

a three foot flashboard to prevent entry of fish from the other lakes. In spite of our efforts we began seeing rough fish in the lake during the summer. During the fall and winter floods made it necessary to open all valves to pass water thru as quickly as possible. We know now that there is a rough fish population back in the lake. Only time will tell what will result from the game fish stockings.

Fishing season began on the refuge April 1 and ran through September 10. Some nice catches of channel catfish were taken on shad bait early in April. When relatively clear water was passed between Swan lake and South Pool crappie fishing was good near the control structure. The remainder of the pole and line fishing was only fair. Set liners had a rather mediocre season except for an occassional flathead. A lady from Sumner took a 28 pound flathead from a set line without assistance.

A four day seining season for rough fish removal was held July 7-11. We had almost more fishermen than we had fish. On the first day 981 seiners took only 9,300 pounds of rough fish. The remaining three days of seining produced very few fish. About five tons of rough fish were removed over the four day period. A seven day season in 1963 produced 24,255 pounds of fish.

I. Disease

About 50 Canada geese were lost to crop impaction prior to the hunting season. Two immaciated geese were taken to the University of Missouri for examination on October 26th. This condition was determined to have been caused by Aspergillosis. No sick ducks or geese have been observed this winter.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

No funds were available for major development. One new pond was built in the native grass area under the S & M Program.

B. Plantings

Upland Herbaceous Plants

About 50 acres in the prairie chicken area was overseeded with Indian grass and big bluestem at a rate of about two pounds to the acre. This seeding was done to improve the composition of the vegetative cover. The seeding was done in October.

The permanent landing strip located south of headquarters was seeded to a mixture of bluegrass and ladino clover.

Cultivated Crops

A total of 684 acres were planted to corn. The refuge staff raised 470 acres and the remaining 214 acres were grown by permittees. Lack of rainfall at critical times during the summer cut the corn yield to about half of what it should have been. Corn grown by the staff averaged 46 bushel per acre. Permittee corn yielded slightly less.

The new restriction on the use of pesticides prevented us from using aldrin in the fertilizer to control cutworms and other insect pests. We had to replant 85 acres of corn that was completely ruined by cutworms. Many other fields were damaged by cutworms, but were not replanted. As luck would have it, some of the corn that had to be replanted produced our highest yield. A 90 day corn was used when we replanted and the dry periods hit before this corn had matured to where it could be badly damaged.

We had 111 acres of milo on the refuge this year. The 81 acres raised by permittees averaging 35 bushels per acre were taken as refuge share and remained in the field. The 30 acres of milo grown by the refuge staff was from bird resistant milo furnished for experimental purposes by the R.O. This seed was received late. The ground was dry and only about half the seed grew. The plants that grew produced huge heads of good plump seed. We can not vouch for the "bird resistance" of this milo. Blackbirds roosted in phragmites at the edge of the field and did not bother it. However, other milo directly across the road was also left alone. This bird resistant milo was readily accepted by the geese and was consumed about the same time the other milo was taken.

Permittees raised and harvested 241 acres of soybeans.

Legumes were grown on 427 acres. Ladino clover occupied 354 acres of this total. Up until this year ladino clover had been the only legume grown for several years. It is a preferred goose browse, but is not drought or flood tolerant and needs to be reseeded almost every year. We are attempting to find a more tolerant legume that is still accepted by the geese. We seeded 27 acres to alsike clover and 46 acres to Ranger alfalfa. We had a rather poor stand of alsike, but it was completely utilized by the geese even before the ladino was gone. The alfalfa was ignored until the clovers were about gone. Then the geese turned to the alfalfa and consumed it except for some of the course stems. The alfalfa seemed to "hold" the geese longer than the clover. Next year we are going to try some strawberry clover on lands that are subject to frequent flooding. If it works out it will be a welcome addition to our food supply.

When it became obvious that our corn crop was not going to be too good we decided to put additional acreage in winter wheat. We put wheat on some land that was not producing a good crop of moist soil plant foods. A total of 775 acres of wheat varying from two to six inches tall were waiting for the geese when they arrived.

C. Collections and Receipts

About 100 pounds of Indian grass and big bluestem were harvested from the plots near headquarters and seeded in the prairie chicken area.

We usually got our seed wheat from Squaw Creek Refuge. This year due to hail and floods they had no wheat available. This year the State owned Schell-Osage Area provided us with three loads and one load was hauled from DeSoto Bend.

D. Control of Vegetation

All legume fields were mowed to control weeds and to provide a succulent growth in the fall. All roads and trails were mowed to control brush and allow them to blow free from snow. Part of the native grass area was mowed to retard growth of brush and saplings.

E. Planned Burning

Area III (the S & T shooting lane) was burned January 30 to remove accumulated vegetation and retard growth of brush. We planned to burn B-3, but lack of water in Silver Lake created too much danger of the fire getting out of hand. It will probably be too wet to burn it in 1965.

F. Fires

One small fire resulted from charcoal dumped by a hunter in the K-lane, but was extinguished before any damage resulted.

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Goose Banding

A pre-season sample of 1,558 geese were banded prior to the season opening on October 20th. This is the largest pre-season sample ever taken at Swan Lake. A post-season sample of 1,228 geese were banded immediately following the close of goose season on December 13th. The young/adult ratio was .85 during the pre-season and 1.05 during the post-season. The 1,044 Schell-Osage transfer geese caught between December 4-10 showed a .65 young/adult ratio. The decrease in young/adult ratios by early December is logical and can be explained by their vulnerability, but why the 1.05 ratio during the post-season sample. Most of the post-season sample was taken during a short period in a few net shots. A non-representative sample can easily be obtained in this manner thus giving biased data. The pre-season and the Schell-Osage transfer data are probably more nearly correct than the post-season data.

B. Goose Transfer

This was the second of a three year program of transferring geese from Swan Lake to refuges in Arkansas and Louisiana in an attempt to

encourage Canada geese to migrate further south than Swan Lake. All young of the year birds were used for transfer to Region IV refuges. Trap run geese were sent to the State owned Schell-Osage Area. All quotas were met. The areas receiving geese and the numbers are shown in the table below.

Refuge	Number Transfered	Band Color
Holla Bend, Arkansas	1,500 Young	Red
White River, Arkansas	1,500 Young	Green
Lacassine, Louisiana	750 Young	Yellow
Schell-Osage, Missouri	1,044 Trap Run	Regular
Total...	4,794	

When we began catching the geese transferred in 1963 during our pre-season sample in 1964 we found that the color on many of the anodized bands had faded badly. It was decided that a plastic band of the same color would be put on along with the anodized band during the 1964 transfer. These plastic bands were of the wrap around type sealed with acetone. The geese transferred in 1964 were all banded on the left leg using both the plastic and anodized band. Colors were the same as assigned in 1963. We also added plastic to the right leg of 1963 transplants when they were caught during 1964 trapping operations.

The trapping and transfer of the same number of geese to Region IV refuges in 1964 as were transfered in 1963 took just half the time and was completed ten days earlier. Region IV provided Roger Steiner, Tennessee Refuge and Jimmy Tisdale, Cross Creeks Refuge to help at Swan Lake plus handling transportation of the geese. Region III provided Dave Olson, Agassiz Refuge, Jerry Schatzko, LaCreek Refuge, and Ed Anderson, Schiawassee Refuge to help at Swan Lake. The State of Missouri furnished Clarence Wagy and Wayne Williams to help throughout the trapping season.

We experimented with some improvements in trapping and handling. A new type net was constructed of No. 189 knotless nylon 1½ inch bar measure and hung on the bias. An 18" skirt made of the same material hung square and tied back to the net proper was added to the outside of the net. The geese did not become entangled in the 1½ inch mesh but were prevented from running out from under the net by the skirt that surrounded it. It was a great work and time saver even when the geese were removed by hand. We also found that we could drive the geese from under the net into a crate mounted on a trailer. Then we could drive the geese from the trailer into the holding pens thus eliminating handling the birds by hand until ready to load them out. This works fine when any age geese are transferred. When known age birds are needed they must be handled once by hand before they are penned in order to know how many geese you have in the pen ready for transfer. Another advantage of the new net is that the geese, not being actually entangled in the mesh, do not fight as much and paralysis is practically eliminated. Mr. Thornsberry was primarily responsible for the new methods adapted and a report has been written and submitted to the

Incentive Awards Committee.

Night Drive Trapping Canada Geese

A group of individuals got together at the Banding Workshop held at Agassiz Refuge in August and discussed the possibility of night drive trapping Canada geese. Arrangements were made to borrow two portable generators and spot lights from the State of Iowa. We built a covered catch pen large enough to hold a thousand geese in shallow water near the picnic area on Swan Lake. We ran two leads from the opening of the pen. One lead ran at an angle to the shoreline. The other 500' lead ran out into the lake. We chose October 6, during the dark of the moon, to try the experiment. We used two boats each with a portable generator and a spot light. One boat had Wildlife Technician Thornsberry running the motor and Biologist Green operating the light. The other boat had Manager Timmerman running the motor and Biologist Dill with the light. We pushed geese ahead of us and were able to get 300-400 between the leads and almost into the pen. We hesitated to get 25-30 stubborn geese past the end of the lead. All the geese flew except six that were captured.

We tried two more nights using three boats, but were not successful. The third boat with flood lights was borrowed from Missouri Fisheries.

Although we were not successful, we feel that this method can work. It is essential that the night be very dark. All pen and lead material should be dark to make them harder to see. Flood lights are probably much better than spot lights. Care must be taken to keep lights off the pen, leads, shoreline or other boats. Geese should be pushed along at a good rate of speed yet not fast enough to force them to fly. No amount of noise seems to bother, but noise should be constant. We worked the early part of the night. It might be better to work toward morning, but before the sky begins to get light. These points may help someone succeed where we failed while using available materials and equipment.

VI PUBLIC RELATIONS

A. Recreational Uses

We built twelve new picnic tables for use at the picnic area. Lack of shade trees limits the use of this area somewhat, but under the right conditions all facilities are utilized.

There is almost a constant stream of traffic to the observation tower on week-ends from the time the geese arrive until after hunting season ends. Traffic is somewhat lighter on week days and after the hunting season, but there are still a lot of people who come just to see and hear the geese.

B. Refuge Visitors

Name	Address	Purpose of Visit	Date
F. H. Davis	FWS - Minneapolis	Depredations	1/7-8
Chuck Griffith	FWS - Minneapolis	Depredations	1/7-8
Wayne Sanders	FWS - Jefferson City	Depredations	1/11-12
John Hague	FWS- St. Joseph	Depredations	1/28
Glen Chambers	MCC - Jefferson City	Take Pictures	1/28
Mike Milonski	MCC - Jefferson City	Goose	1/30
Elroy Lumb	FWS - Washington D.C.	Soil & Moisture Plans	1/31-2/1
Ted Shanks	MCC - Jefferson City	Visit	2/5
Harris White	Mcc - Salisbury	Law Enforcement	2/10
Jim German	MCC - Fountain Grove	Farming Program	2/13
Larry Campbell	MCC - Columbia	Captive Geese	3/2
Jim German	MCC - Fountain Grove	Goose Count	3/4
Wayne Sanders	FWS - Jefferson City	Law Enforcement	3/4
Dave Swendsen	FWS - M&E	Law Enforcement	3/4
Harris White	MCC - Salisbury	Law Enforcement	3/5
Don Leach	MCC -	Tour Refuge	3/5
Albert Krege	FWS - Sand Lake Refuge	D7 Control Unit	3/6
John Lokemoen	FWS - RBS	Carroll County Area	3/10
Dr. Wm. Elder	U. of Mo. Columbia	View Birds	3/14
John Hague	FWS - St. Joseph	Zon Gun	3/23
Jim German	MCC - Fountain Grove	Visit	3/26
Mike Milonski	MCC - Jefferson City	Visit	3/26
Fred Veach	MCC - Swan Lake	Visit	3/31
Leo Kirsch	FWS - Arrowwood Refuge	Goose Paper	4/6
Coval Gann	MCC - Chillicothe	Fishing Success	4/6
Arthur Covalt	FWS - Crescent Lake	Pick Up Motor Crane	4/7
Wayne Larker	FWS - Crescent Lake	Pick Up Motor Crane	4/7
Jack Hoey	MCC -	Stock Silver Lake w/ Fish	4/7
Ted Shanks	MCC - Jefferson City	See Leo Kirsch	4/10
Charles Kniffin	FWS - St. Charles	Banding Tools	4/10
Don Simpson	FWS - Bismark,N. D.	Fishing	4/29
Wayne Sanders	FWS - Jefferson City	Bring Goslings	5/5
Bertrand Laugen	FWS - Minneapolis	Administrative Inspection	5/7-8
Charles Guthrie	MCC - Brookfield	Seining Season	6/5
Jack Wallace	MCC - Brookfield	Seining Season	6/5
John Hague	FWS - St. Joseph	Dove Traps	6/10
Clair Rollins	FWS - Minneapolis	S&M Inspection	6/12-13
Herb Dill	FWS - Minneapolis	Banding & Transfer Program	6/17-18
Dr. Wm. Green	FWS - Winona	Banding & Transfer Program	6/17-18
Ted Shanks	MCC - Jefferson City	Goose Management	6/18
Dick Vaught	MCC - Columbia	Goose Management	6/18
Bob Dunkenson	MCC - Jefferson City	Goose Management	6/18
Jim German	MCC - Fountain Grove	Goose Management	6/18
Harold Burgess	FWS - Squaw Creek Ref.	Goose Management	6/18
Byron Anderson	FWS - Neosho Fiseries	Bring 20,000 Bass	6/25
Charles Guthrie	MCC - Brookfield	Check Fishermen	6/25
W. H. Stuesse	MCC -	Check Seiners	7/8
Bill Seragin	M6C -	Check Seiners	7/8

Refuge Visitors - continued

Name	Address	Purpose of Visit	Date
Ron Byrd	MCC -	Check Seiners	7/8
Jack Wallace	MCC - Brookfield	Check Seiners	7/8-9-10
Vernon Rinae	MCC - Carrollton	Check Seiners	7/8
Harris White	MCC - Salisbury	Check Seiners	7/8-9-10
Coval Gann	MCC - Chillicothe	Check Seiners	7/8
Bob Dunkeson	MCC - Jefferson City	Watch Seining Operation	7/8
Don Leach	MCC -	Check Seiners	7/8
Cliff Reisinger	MCC - Macon	Check Seiners	7/8
Wayne Sanders	FWS - Jefferson City	Dove Traps	7/10
Ted Shanks	MCC - Jefferson City	Visit	7/15
Dick Vaught	MCC - Columbia	Goose Information	7/16
Upton Henderson	U of Mo - Columbia	Hunter Survey	7/16
Dick Vaught	MCC - Columbia	Band Return Cards	7/24
Jim Shaw	FWS - Minneapolis	Kling Land Exchange	8/4-5-6
Jack Wallace	MCC - Brookfield	Law Enforcement	8/5
Harold Burgess	FWS - Squaw Creek	Visit	8/6
Upton Henderson	U of Mo. Columbia	Survey	8/14
Max Johnson	Jefferson City	Courtesy	8/14
Mike Milonski	Jefferson City	Courtesy	8/14
Lynn Coy	Mo. State Highway Patrol	Visit	8/17
Sammie Lewis	MCC - Schell-Osage Area	Visit	8/20
Henry Munkres	FWS - Squaw Creek	Truck	8/25
Wayne Sanders	FWS - Jefferson City	Dove Banding	8/26
Kenny Sadler	MCC - Jefferson City	Dove Banding	8/26
Larry Ryan	MCC - Jefferson City	Dove Banding	8/26
Upton Henderson	U of Mo. Columbia	Hunter Survey	9/9
Bob Dunkeson	MCC - Jefferson City	Goose Banding	9/16
Dick Vaught	MCC - Columbia	Goose Banding	9/22
Jim German	MCC - Fountain Grove	Goose Banding	9/22
Clarence Wagy	MCC - Swan Lake P.H.A.	Goose Banding	9/22
Wayne Williams	MCC - Swan Lake P.H.A.	Goose Banding	9/22
Yuell Willis	MCC - Schell-Osage Area	Pick up tractor	9/23
Sammie Lewis	MCC - Schell-Osage Area	Pick up tractor	9/23
L. M. Springer	FWS - Minneapolis	Become aquainted w/area	9/30
Ralph Page	FWS - Minneapolis	Same	9/30
Joe Haynes	MCC -	Tour area	9/30
Bill Brown	MCC - Swan Lake P.H.A.	Get Acquainted	10/1
Herb Dill	FWS - Minneapolis	Drive trapping geese	10/6-7-8
John Winship	FWS - Minneapolis	Drive trapping geese	10/6-7-8
Dr. Wm. Green	FWS - Upper Miss.	Drive trapping geese	10/6-7-8
Harold Burgess	FWS - Squaw Creek	Drive trapping geese	10/8
Lee Burgess	FWS - Squaw Creek	Drive trapping geese	10/8
Don Stephens	KWIX Radio - Moberly	Tape Interview	10/9
Upton Henderson	U of Mo. Columbia	Hunter Survey	10/13
Mr. & Mrs John T. Daniel	Little Rock, Ark	Bird Watch & Photography	10/15-16
OPEN HOUSE 3,750	Visitors	Tour Area	10/18
Marceline School	5th Grade Pupils	See Waterfowl	10/19

Refuge Visitors - continued

Name	Address	Purpose of Visit	Date
John Hague	FWS - St. Joseph	Law Enforcement	10/19-25
Charles Kniffin	FWS - St. Charles	Law Enforcement	10/19-22
Morgan Wilson	FWS - Sikeston	Law Enforcement	10/19-25
Dave Olson	FWS - Aggassiz Refuge	Trap Geese	10/23-11/10
Ed Andersson	FWS - Shiawassee Refuge	Trap Geese	10/26-11/6
Roger Steiner	FWS - Tennessee Refuge	Trap Geese	10/25-11/10
Jimmy Tisdale	FWS - Two Cross Creeks	Trap Geese	10/25 -11/10
Jerry Schotzko	FWS - Lacreek Refuge	Trap Geese	10/25-11/10
Ralph Von Dane	FWS - Peoria	Tollerton Case	10/27
Bus Load Girls	Marshall State School	See Waterfowl	10/27
Wayne Sanders	FWS - Jefferson City	Tollerton Case	10/27
Ray Cowan	FWS - Holla Bend	Transport Geese	11/3
Dennis Holland	FWS - Holla Bend	Transport Geese	11/3
Bus Load Girls	Marshall State School	See Waterfowl	10/28
Carroll Denney	FWS - Holla Bend	Transport Geese	11/3
Wayne Sanders	FWS - Jefferson City	Law Enforcement	11/3
Calvin Fraize	FWS - White River	Transport Geese	10/28
Al Johnson	FWS - Lacassine Refuge	Transport Geese	10/28
Calvin Fraize	FWS - White River	Transport Geese	11/4
Tom Coker	FWS - White River	Transport Geese	11/4
Tom Klett	FWS - Devils Lake AAO	Transport Geese	11/3
John Lokemoen	FWS - Minneaplois	Transport Geese	11/3
Wm. Ackernack	FWS - Washington, D.C.	Tour Refuge	11/4
Howard Lipke	FWS - Huron AAO	Tour Refuge	11/6
Milt Reeves	FWS - Minneapolis	Law Enforcement	11/10
Jack Foster	FWS - Mark Twain	Excess Property	11/17
Ed Cozier	FWS - Mark Twain	Excess Property	11/17
Duane Koss	FWS - Valentine	Surplus Property	11/17
Fritz Kriege	FWS - Sand Lake	Surplus Property	11/17
Don Wooldridge	MCC- Jefferson City	Photography	11/17
John Winship	FWS - Minneapolis	Count Geese	11/17-19
Dr. Wm. Green	FWS - Upper Miss.	Count Geese	11/17-19
Wayne Sanders	FWS - Jefferson City	Law Enforcement	11/28-29
Herb Dill	FWS - Minneapolis	Goose Trapping	11/29-12/1
Dave Swenson	FWS - Minneapolis	Law Enforcement	12/7
Dr. Wm. Green	FWS - Upper Miss.	Pictures	12/8-9
Joe Saylor	MCC -	Road Block	12/9
John Hague	FWS - St. Joseph	Law Enforcement	12/18-22

C. Refuge Participation

The annual open house was held on October 18 just prior to the opening of goose season. Refuge personnel were on duty at the tower to pass out information, answer questions, and to keep the traffic moving. At least 3,750 people took the self-guided auto tour of the refuge. Weather conditions were good and everyone should have seen geese.

The following is a list of some of the programs and tours provided by refuge personnel. Many individual tours provided for photographers and newsmen are not listed.

January 20 - Timmerman - Slide talk 45 4-H members Triplett School.
March 14 - Timmerman - Tour 20 Kansas City Boy Scouts - Troup 219.
March 14 - Timmerman - Tour 45 Ornithology students U. of Missouri.
October 4 - Timmerman - Tour 18 4-H members from Marceline, Missouri.
October 10 - Thornsberry Tourll Biology students U. of Missouri.
October 10 - Timmerman - Tour six Wildlife Grad. Students - U. of Mo.
October 11 - Timmerman - Tour 45 Canoe Club - Kansas City
October 17 - Timmerman - Tour and trapping demonstration 40 Boy Scouts Kansas City
October 17 - Timmerman - Tour 15 Baptist Church Youth Group from Moberly
October 19 - Lentz - Tour 60 Fifth grade pupils Marceline School
October 26 - Timmerman - Tour 45 Students Marshall State School
October 27 - Lentz - Tour 45 Students Marshall State School
October 27 - Lentz - Tour 45 Students Marshall State School
October 28 - Lentz - Tour 45 Students Marshall State School
October 31 - Timmerman - Tour and trapping demonstration seven Explorer Troop No. 115 Kansas City
December 10 Timmerman - Slide talk 30 Lions Club members at Hale, Mo.

Several short tapes were cut by the manager by telephone during the goose season for the Brookfield Radio Station to keep the public informed. A 15 minute tape was cut explaining the need for an early season closure.

D. Hunting

The goose season opened on October 20 and ran for 55 days through December 13. The 25,000 Canada goose kill quota was exceeded by 1,643. Although these few extra birds being killed did not hurt the Eastern Prairie Goose Flock it was unfortunate in that it may tend to set a bad precedent. We projected the kill as carefully as possible in order to give time for the season closure order to be signed and published. Immediately after we determined when the season should be closed a change in weather caused the geese to fly more, thus increasing the daily kill. When word got around that the season was going to be closed everyone had to get in one last hunt. Sheer hunter numbers also increased the daily kill. The attached table from Missouri Waterfowl Biologist Vaught's report shows how the season went and bears out this hunter increase in the last few days.

TABLE II CANADA GOOSE HARVEST

SWAN LAKE ZONE

1964 (Road Block Data)

Date	Swan Lake		Fountain Grove		Private		Total		Running Total	
	Hunters	Kill	Hunters	Kill	Hunters	Kill	Hunters	Kill	Hunters	Kill
October 20	211	402	201	264	1424	1773	1836	2437	1836	2437
" 21	212	390	125	152	959	873	1296	1415	3132	3852
" 22	195	321	116	96	1067	968	1378	1385	4510	5237
" 23	189	289	96	70	1093	866	1378	1225	5888	6462
" 24	206	306	165	66	1431	1113	2279	1485	8167	7947
" 25	212	294	185	67	1472	1058	1869	1419	10036	9366
" 26	199	286	113	43	812	658	1124	987	11160	10353
27	197	291	113	50	802	582	1112	923	12272	11276
28	199	250	95	41	833	424	1127	715	13399	11991
" 29	190	181	85	37	795	272	1070	490	14469	12481
" 30	181	160	187	34	580	215	948	409	15417	12890
" 31	207	158	235	25	1199	371	1641	554	17058	13444
November										
" 1	211	134	217	38	1222	308	1650	480	18708	13924
" 2	192	132	142	24	496	145	630	301	19338	14225
" 3	190	94	120	14	491	108	801	216	20139	14441
" 4	180	109	103	27	465	120	748	256	20887	14697
" 5	194	99	203	25	744	109	1141	233	22028	14930
" 6	182	79	121	12	698	87	1001	178	23029	15108
" 7	202	101	177	43	951	99	1360	351	24389	15351
" 8	201	121	208	45	979	119	1388	285	25777	15636
" 9	173	133	111	35	237	83	521	251	26298	15887
" 10	159	109	100	29	218	62	477	200	26775	16087
" 11	169	121	101	36	233	69	503	291	27278	16378
" 12	124	115	72	29	279	60	475	204	27752	16582
" 13	105	118	46	25	236	61	387	204	28140	16786
" 14	174	159	134	58	363	175	671	392	28811	17178
" 15	189	170	147	31	525	187	861	388	29672	17566
" 16	155	152	78	58	323	213	556	423	30228	17989
" 17	157	170	119	47	327	231	603	446	30831	18435
" 18	175	195	110	38	364	195	649	428	31480	18863
" 19	162	217	75	29	411	168	648	414	32128	19277
" 20	160	185	70	13	406	142	636	340	32764	19617
" 21	169	115	99	11	424	138	692	264	33456	19881
" 22	180	146	83	8	452	172	715	326	34171	20207
" 23	140	207	52	7	279	200	471	414	34642	20621
" 24	165	183	44	14	329	196	538	393	35180	20014
" 25	169	221	43	12	245	288	457	521	35637	21535
" 26	173	160	82	13	251	245	506	418	36143	21953

TABLE II CANADA GOOSE HARVEST
(Continued)

Date	Swan Lake Hunters	Swan Lake Kill	Fountain Grove Hunters	Fountain Grove Kill	Private Hunters	Private Kill	Total Hunters	Total Kill	Running Total Hunters	Running Total Kill
November 27	167	192	153	64	533	338	853	594	36996	22547
" 28	173	153	168	32	672	160	1013	345	38009	22892
" 29	189	104	115	4	734	109	1038	217	39047	23109
" 30	136	77	17	3	197	42	350	122	39397	23231
December 1	146	93	17	2	212	51	375	146	39772	23377
2	61	80	34	1	88	44	183	125	39955	23502
3	124	103	8	3	179	56	311	162	40266	23664
4	65	78	1	0	94	43	160	121	40426	23785
5	118	47	19	4	199	82	336	133	40762	23718
6	133	74	10	8	224	129	367	211	41129	24129
7	96	72	10	1	162	84	268	159	41397	24286
8	95	82	6	9	179	95	280	186	41677	24472
9	118	89	9	2	222	103	349	194	42026	24766
10	111	152	12	10	159	198	282	360	42308	25126
11	145	203	16	20	208	264	369	487	42677	25613
12	175	228	43	31	472	336	690	595	43367	26208
13	164	167	46	23	442	245	652	435	44019	26643
Totals 1964	9164	9069	5276	1983	29579	15591			44019	26643
1963	9964	5888	4714	1948	25799	10304			40477	18140
1962	9609	2513	962	601	9831	5199			31759	14556

Total Public Hunters 1964 14440

Total Private Hunters 29579

Ratio Pri/Pub 2.05

Total Public Kill 11052

Total Private Kill 15591

Ratio Pri. To Pub. 1.41

Success Ratio

Public .76

Private .53

Average # hunters per day within Swan Lake Zone 800

Success ratio per hunter trip in Swan Lake Zone .61

The season opened with a "bang." Geese had established feeding flights off the refuge and 2,437 were killed on opening day. The kill ratio on the public shooting area was 1.95 Canada geese per man. During the first week over 10,000 Canada geese were bagged. The kill gradually tapered off, but remained relatively high throughout the season. Brief periods of unseasonally warm or clear cold weather caused the birds to set tight on the refuge, thus reducing the daily kill.

The refuge food supply was pretty well depleted by mid-November. This forced the geese to fly out for food. Most of the feeding was done in late afternoon and on moonlight nights. The kill in the morning was quite light.

Although the season was closed short of the 70 days allotted everyone seemed happy with it. Shooting had been good and most hunters felt that they would rather have a few good hunts than a lot of poor ones.

Hunting pressure is increasing tremendously from year to year. More and more hunters are coming longer distances to hunt in this area. This year the greatest increase was shown by Iowa, Illinois, and St. Louis hunters. The public hunting area on Swan Lake Refuge can accommodate only a limited number of hunters and is usually filled to capacity. The State owned Fountain Grove Area can take care of a few of these hunters, but the bulk of them must hunt on private land. Day shooting areas are increasing in number and bu$$ness in booming.

We are resigned to the fact that in most cases we provide goose shooting and not goose hunting, but more rigid controls and regulations would improve it somewhat. Some things that would help are compulsory blind spacing, a season limit, compulsory checking, and a shell limit on the public shooting areas.

The kill is determined from information obtained at road check stations. The information obtained probably quite accurate but it is time consuming and dangerous when road conditions are bad. These road checks could be eliminated if the State would pass a law making checking compulsory. Compulsory check stations would require about the same number of man hours, but we would have accurate kill data and have a system set up for tagging and a season limit.

E. Violations

This seemed to be a bad year for law violations. Some days it seemed as though everyone that was checked was wrong. The following violations were found on or in the vicinity of the refuge during the 1964 season.

Violation	No. of Cases	Fines	Cost
Unplugged Guns	12	$168.00	$132.00
Hunting on Borrowed Permit	9	295.00	99.00
Non-Resident w/Resident Permit	13	325.00	143.00

Violation	No. of Cases	Fines	Cost
Changing Blinds	1	$15.00	$11.00
Late Shooting	3	50.00	33.00
Early Shooting	29	400.00	319.00
Refuge Trespass	10	140.00	110.00
Over Limit of Geese	18	350.00	198.00
Shooting Ducks on Refuge	5	41.00	55.00
Refuge Trespass	2 Pending		
Non Resident w/Resident Permit	2 Pending		
Over Limit of Geese	1 Pending		
TOTALS	105	$1,784.00	$1,100.00

The above table shows only cases taken to State Court. Several cases were also prosecuted in Federal Court when no State violation was involved.

Safety

This was a bad year for the Safety Record at Swan Lake. On June 25 Maintenanceman Holland sustained deep puncture wounds in the right leg when it was pinned between the cultivator and the tool box on a tractor. This accident resulted in 15 days lost time. Wildlife Technician Thornsberry severely sprained his right ankle September 11 resulting in six days lost time. These accidents were discussed at safety meetings and everyone was urged to take every precaution to prevent accidents and work safely. A safety board will be formed to handle the matter of safety meetings etc. As of the end of 1964 we have a record of 101 accident-free days.

VIII OTHER ITEMS

A. Items of Interest

Depredations

Several scaring perimts were issued prior to the opening of the season. Most of these complaints were from farmers with geese going into standing corn and beans.

This was a fairly dry year and most of the corn was picked before the close of the season. Three scaring permits were issued to three farmers having trouble with geese in standing corn. Permits were issued and delivered to two chronic complainants immediately after the close of the season. They were instructed to take action to prevent the geese from starting to use their wheat and grass seedings. We heard nothing further from them.

Hunter Accidents

The accidents on the public shooting area ran in pairs this year. We only lost one hunter.

On October 21 a hunter we knew as W. G. Whitaker had a heart attack while setting out decoys at the R-1 blind. An ambulance was called and he was taken to Pershing Memorial Hospital at Brookfield where he died. We called the hospital later on in the day and found out they had had no one registered by that name. It turned out that the victim's real name was Chris Roose hunting on a borrowed reservation and permit belonging to Whitaker. The victim was not prosecuted, but several other individuals trying to do the same thing were caught and prosecuted.

Also on the 21st of October a hunter named George P. Miller blew the barrel and forearm off an L. C. Smith, 12 gauge double barrel. His right thumb was lacerated but injuries were minor. He had both 12 and 20 gauge shells in his hunting coat, so we can guess about what happened.

Mr. Steve Boyle was hunting in V-3 blind on October 31 with his partner Robert Lyons. Lyons ejected a spent shell from his old type Marlin pump gun (hammer type) and was holding the trigger down. The gun discharged inside the concrete pit. Shot ricocheted and struck Boyle in the face, neck, and hands. He was taken to Pershing Memorial Hospital by the Refuge Manager. Mr. Boyle spent three days in the hospital.

Also on this same day a hunter shot at a goose using a 10 gauge single barrel hammer gun. The recoil of the shot drove the hammer through his upper lip. He was hospitalized and had three stitches taken.

Credits For Preparation

Mr. Lentz prepared the weather data, visitor list, NR-1 & 1C, and typed the report. The Refuge Manager prepared the balance of the report.

B. Photographs

Most of the photographs attached to this report were taken by Wildlife Technician Thornsberry. Biologist (Management) Green took a couple of the shots using Thornsberry's equipment.

SIGNATURE PAGE

Submitted by:

Robert H. Timmerman
(Signature)
Robert H. Timmerman

Refuge Manager
Title

Date: February 18, 1965

Approved, Regional Office:

Date: 3-15-65

(Signature)

Regional Refuge Supervisor

Refuge staff. Reading from left to right Maintenanceman Warren, Windsor, and Holland, Clerk Lentz, Wildlife Technician Thornsberry, Operator General Howerton, Refuge Manager Timmerman.

This is a portion of the corn grown by the Refuge staff. The picture was taken after the corn had been band treated with Atrazine and cultivated once.

Maintenanceman Holland on the International 706 acquired this year.

Maintenanceman Windsor on the International 560. Note where corn is missing caused by cutworms.


FARMALL


FARMALL

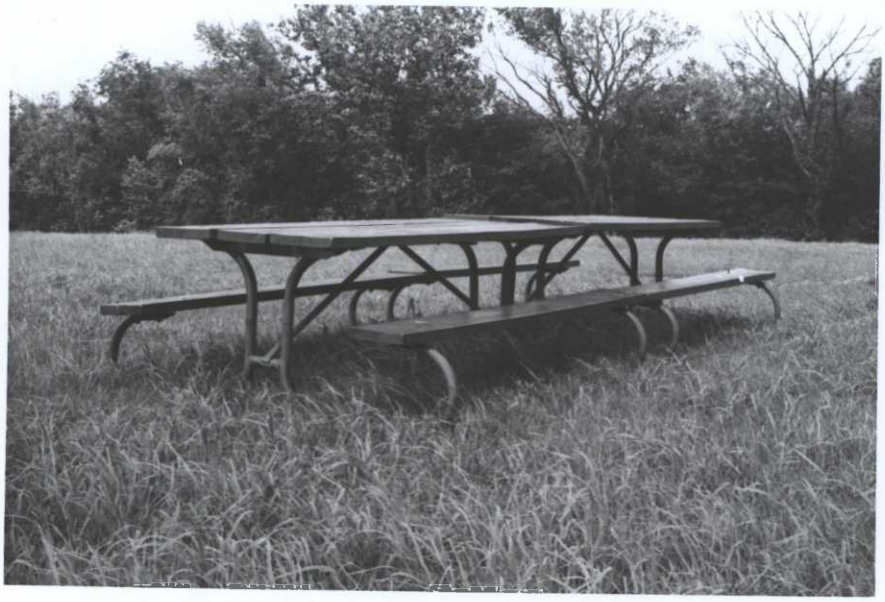
Maintenanceman Warren clipping clover using the International 460. The spray rid on the front of the tractor was used to apply Atrazine.

Operator General Howerton hoeing corn with the Minneapolis-Moline 5 Star. This is one of our oldest units and will be replaced by a 7 0 6 in 1965.


INTERNATIONAL

This is a portion of the crowd during the open house. Actually there are often more cars than this at the observation tower on just an ordinary week-end day.

Two of the tables designed and built in the refuge shop.

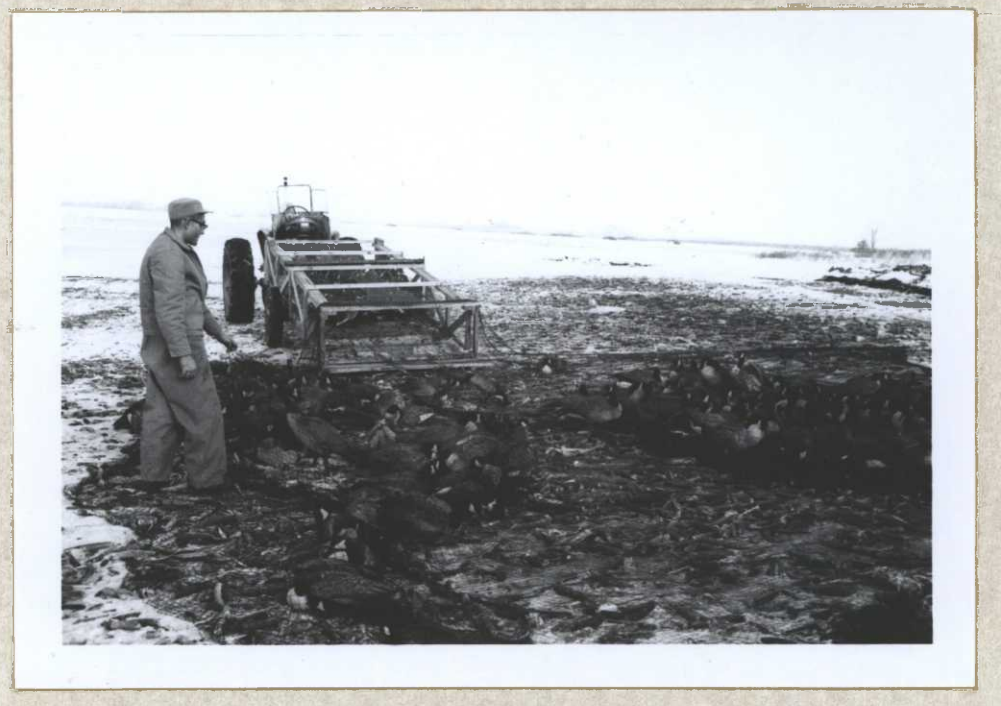


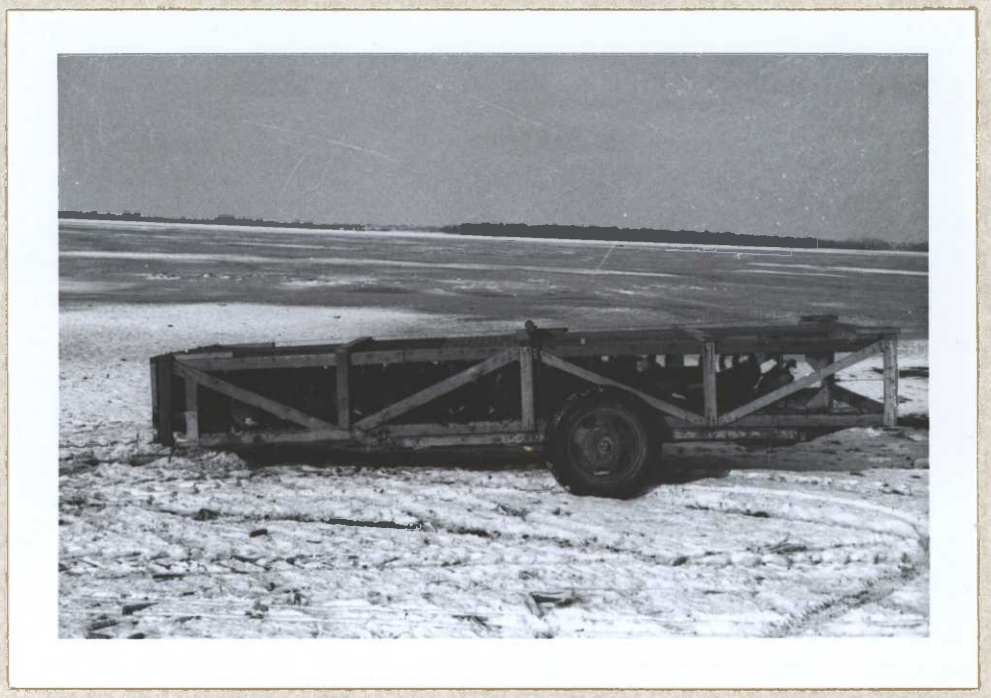
Clarence Wagy (P&R employee of the State provided to help with trapping) holding up the new type net to show the skirt.

Thornsberry and Timmerman also trying to show the skirt on the net.

This picture shows how the net was hooked over the back of the trailer. Geese were directly into the trailer from in under the net.

Trailer load of over 200 geese on the way to the holding pen where they will be driven from the trailer into the pen.





3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Swan Lake MONTHS OF September TO December, 1964

(1) Species	(2) Weeks of reporting period: 9/6-12 (1)	9/13-19 (2)	9/20-26 (3)	9/27-10/3 (4)	10/4-10 (5)	10/11-17 (6)	10/18-24 (7)	10/25-31 (8)	11/1-7 (9)	11/8-14 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	100	3,000	12,000	50,000	75,000	100,000	121,000	119,000	120,000	100,000
Cackling										
Brant										
White-fronted								10	20	20
Snow										
Blue (Combined)				100	5,000	10,000	15,000	15,000	20,000	20,000
Other										
Ducks:										
Mallard	200	300	2,000	2,000	4,000	8,000	15,000	25,000	40,000	60,000
Black							500	500	500	500
Gadwall	10	20	100	100	200	400	500	500	300	300
Baldpate		10	20	50	100	500	500	5,000	5,000	6,000
Pintail	100	1,000	8,000	9,000	18,000	30,000	30,000	25,000	20,000	14,000
Green-winged teal		20	50	300	7,000	9,000	10,000	10,000	12,000	7,000
Blue-winged teal	2,000	7,000	11,000	10,000	8,000	7,000	3,000	1,000	200	
Cinnamon teal										
Shoveler		20	50	100	200	200	300	300	200	100
Wood	400	400	400	400	500	700	1,000	1,000	1,500	1,000
Redhead							10		20	
Ring-necked							100	20	6,000	
Canvasback							10			
Scaup							500	500	4,000	
Goldeneye										
Bufflehead										10
Ruddy						10				
Other										
Coot:		50	500	2,000	3,000	4,000	5,000	4,000	3,000	2,000

INT.-DUP., D.C.-53824-59

3 -175

Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake MONTHS OF September TO December, 19 64

(1) Species	(2) Weeks of reporting period: 11/15-21	11/22-28	11/29-12/5	12/6/12	12/13-19	12/20-26	12/27-1/2/65		(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	88,000	97,000	66,000	49,000	50,000	50,000	40,000		7,980,700		
Cackling											
Brant											
White-fronted									350		
Snow (Combined)											
Blue	6,000	7,000							686,700		
Other											
Ducks:											
Mallard	75,000	85,000	55,000	100	100	100	200		2,604,000		
Black	500	500							21,000		
Gadwall									17,010		
Baldpate	4,000	1,000							155,260		
Pintail	7,000	2,000							1,148,700		
Green-winged teal	10,000	3,000							478,590		
Blue-winged teal									344,400		
Cinnamon teal											
Shoveler	100								10,990		
Wood	500	300							56,700		
Redhead	50								560		
Ring-necked	250								44,590		
Canvasback									70		
Scaup	2,000								49,000		
Goldeneye											
Bufflehead	20								210		
Ruddy									70		
Other A. Merganser	10								70		
Coot:	1,000	500							175,350		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	8,667,750	140,020	
Ducks	4,931,220	99,430	
Coots	175,350	5,000	

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by Robert H. Timmerman

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

INT.-DUP., D.C.-53824-59

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of September to December 1964

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
White Pelican	35	9/16	1,500	Sept.						
Pied-billed Grebe			25	9/24						
Great Blue Heron			50	9/16						
Sora Rail	Abundant late Sept. & early October.									
II. Shorebirds, Gulls and Terns:										
Nothing significant.										

(over)

(1)	(2)		(3)		(4)	(5)		(6)
III. Doves and Pigeons:								
Mourning dove	Year around resident.							
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	None identified.							
Duck hawk								
Horned owl	Common resident.							
Magpie								
Raven								
Crow	Common resident.							
Bald Eagle	1	10/30	54	12/31				

Reported by Robert M. Zimmerman

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiforme
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

3-1750c
Form NR-1c
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Swan Lake

Year 1964

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/20-10/25	1,225		Canada Goose	[illegible]	?	2,002	1,225	[illegible]
10/26-11/1	1,384		Canada Goose			1,460	1,384	
11/2-11/8	1,341		Canada Goose			735	1,341	
11/9-11/15	1,093		Canada Goose			925	1,093	
11/16-11/22	1,158		Canada Goose			1,180	1,158	
11/23-11/29	1,176		Canada Goose			1,220	1,176	
11/30-12/6	783		Canada Goose			552	783	
12/7-12/13	904					993	904	
	9,064					9,067		

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-175
Form WR-2
(April 1946)

UPLAND GAME BIRDS

Refuge **Swan Lake** Months of **September** to **December**, 19 **64**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob-white									**275**	**15 - 20 coveys**
Pheasant									**10**	**One brood reported east of shooting headquarters.**
Pinnated Grouse	**One unconfirmed report.**									

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1703
Form NR-3
(June 1945)

BIG GAME

Refuge Swan Lake Calendar Year 1964

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	3,500											250	250	

Remarks: Aerial census by Missouri Biologist on December 7 was 125. Poor coverage. Some influx.

Reported by Robert H. Timmerman

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

INT.-DUP. SEC., WASH., D.C. 59319

3-1755
Form 9-R-5
60701

DISEASE

Refuge Swan Lake Year 19 65

Botulism

* Period of outbreak None

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease Crop Depredation

Species affected Canada Geese

Number Affected Species	Actual Count	Estimated
Canada Geese		

Number Recovered Unknown

Number lost 50

Source of infection Probably soybeans.

Water conditions Good

Food conditions Good

Remarks Opening of hunting season stopped the geese from feeding in private bean fields.

NR-6 Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Swan Lake Calendar Year 1964

1. Visits

a. Hunting 14,440 b. Fishing 9,000 c. Miscellaneous 40,560 d. TOTAL VISITS 64,000

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	14,400	1,000	State
Upland Game			
Big Game			
Other			

Number of permanent blinds 60 hunted

Man-days of bow hunting included above

Estimated man-days of hunting on lands adjacent to refuge 30,000

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	3,000	
Streams and Shores		

1c. Miscellaneous Visits

Recreation 40,260 Official 150

Economic Use 150 Industrial

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. Of GROUPS	NUMBER IN GROUPS
Sportsmen Clubs	4	300		
Bird and Garden Clubs	1	45		
Schools	7	275		
Service Clubs	2	42		
Youth Groups	6	135		
Professional-Scientific				
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	3	Radio Presentations	15
Newspapers (P.R.'s sent to)	8	Exhibits	
TV Presentations		Est. Exhibit Viewers	

3-1756
(Rev. 4/63)

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

Form NR-7

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Swan Lake Year 19 64

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Plant-ing	Survival	Cause of Loss	Remarks
Ladino		4 Lb.	76 Acres		March	Good		
		2 Lb.	63 Acres		March	Good		
Alsike		8 Lb.	27 Acres		March	Fair	Poor soil and	Drouth
Ranger Alfalfa		12 Lb.	46 Acres		March	Excellent		
Indian Grass		2 Lb.	50 Acres		October	?	Too soon to tell.	
Mixed Quail Food		10 Lb.	6 Acres		May	Fair	Too thick.	

TOTAL ACREAGE PLANTED:

Marsh and aquatic_____
Hedgerows, cover patches_____
Food strips, food patches 268
Forest plantings_____

1618

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Swan Lake County Chariton State Missouri

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Corn	158	7,270 Bu.			556	26,759 Bu	684	Wheat	775
								Ladino Clover	354
Soybeans	241	3,615 Bu			-	-	241	Alsike Clover	27
								Ranger Alfalfa	46
Milo	-	-			111	3,480 Bu	111		
Totals	399	10,885 Bu			667	~~29~~ 30,239 Bu	1,036		1,202
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 7 Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,238
Hay - Wild				2. Acreage Cultivated as Service Operation				1,180

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C.91767

3-1570
NR-88
(4/54)

REFUGE GRAIN REPORT

Refuge Swan Lake Months of January through December, 1964

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn	200	2,230	2,430			2,350	2,350	80		80	

(8) Indicate shipping or collection points

(9) Grain is stored at White Barn

(10) Remarks

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., WASH., D.C. 17065

3-1759
Form NR-9
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Swan Lake Year 19~~5~~64

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
Winter Wheat	920 Bu.	July-August			690 Bu. 230 Bu.	Schell-Osage Area DeSoto Refuge	-	-
Bird Resistant Milo	100 Lb.	May			100 Bu	R.O.	-	-

Interior Duplicating Section,
Washington 25, D. C. 84267

3-1979 (NR-12)
(9/63)

Bureau of Sport Fis[illegible]ies and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Swan Lake

Proposal Number:

Reporting Year: 1964

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/1 - 15	Giant Foxtail (Setaria sp)	Corn near H.Q.	300	Atrazine	300 lb.	1 lb/acre	Water 7 lb/acre	Band spray

10. Summary of results (continue on reverse side, if necessary)

Sufficient rainfall was received to make the application a success. Within a few days after the Atrazine was applied the weeds present began to wilt and turn brown. Very little new growth was found. Cost of material for 300 acres of corn sprayed with a band 17" wide over the row was $690.00. Labor and equipment costs were estimated at about $100.00. The application was considered a success. The employees felt that this was the cleanest corn ever grown at Swan Lake.

35500